

## Nu‘uanu Valley ‘Auwai

The verdant and picturesque Nu‘uanu Valley, situated in O‘ahu’s Kona *moku* in the Honolulu *ahupua‘a*, encompasses downtown Honolulu and extends mauka into the Ko‘olau Mountains. The valley’s fresh water systems, including the Nu‘uanu, Pahoa, and Waoloni streams, made it an ideal environment for ancient Hawaiian settlement and agricultural production, allowing for easy transportation between the Ko‘olau Mountains’ leeward and windward sides. Today, the Nu‘uanu Valley’s lower and central portions that extend mauka from Honolulu Harbor contain densely populated urban and suburban neighborhoods; the valley’s upper portion extends through the Honolulu Watershed Forest Reserve.

Although the lower Nu‘uanu Valley’s environment is predominately urban today, less than 150 years ago, lush and fertile cultivated fields occupied much of the valley. The upper valley’s abundant rainfall and the extensive network of fresh water streams and pools created an environment well-suited for agricultural production. Early explorers’ accounts and oral histories transcribed in the early nineteenth century describe expansive fields of terraced taro patches, called *lo‘i*, fed by an intricate network of irrigation ditches (‘*auwai*) that also influenced the *ahupua‘a* residents’ communal lifestyle.

Upon encountering an ‘*auwai* system on Kaua‘i, explorer Nathaniel Portlock was duly impressed by the engineering feat executed by the island’s residents.

This excursion gave me a fresh opportunity of admiring the amazing ingenuity and industry of the natives in laying out the taro and sugar-cane grounds; the greatest part of which are made up on the banks of the river, with exceeding good causeways made with stones and earth, leading up the valleys to each plantation; the taro beds are in general a quarter of a mile over, dammed in, and they have a place on one part of the bank, that serves as a gateway. When the rains commence, which is in the winter season, the river swells with the torrents from the mountains, and overflowed their taro-beds; and when the rains are over, and the rivers decrease, the dams are stopped up, and the water kept in to nourish the taro and sugar-cane during the dry season; the water in the beds is generally about one foot and a half, or two feet, over a muddy bottom . . . the taro also grows frequently as large as a man’s head.

King Kamehameha I conquered O‘ahu in 1795 and established the seat of the Hawaiian monarchy in Honolulu in 1810. The growing city’s population necessitated greater agricultural infrastructure development, especially for taro cultivation. The king, or *Mō‘ī*, retained land in Nu‘uanu for himself and established huge (extensive?) farms in the valley to support the government. By the late nineteenth century, after the *Mahele* abolished the feudal tenure system, Honolulu residents continued to rely on the valley for their primary supply of food and fresh water. Although taro was the valley’s principal crop, banana, sugarcane, sweet potato, rice, and other staples were planted along *lo‘i* embankments. Confirming Nu‘uanu Valley’s agricultural significance, one popular chant, as translated by Hawaiian scholar, Mary Kawena Pukui, reads: *Ho‘ake ahi, ko‘ala ke ola. O na hale wale no ka i Honolulu; oka ‘ai a meka i‘a i Nu‘uanu. Light the fire for there is life-giving substance. Only the houses stand in Honolulu; the vegetable food and meat are in Nu‘uanu.*

Ethnobotanists trace taro cultivation in Hawai‘i to Polynesian settlers who brought the plant with them to the islands. More than just a staple of the Hawaiian diet, the taro (*kalo*) plant’s cultivation and consumption permeates Hawaiian mythology, religion, and customs. According to Hawaiian legend, mankind and the taro plant are brothers. The elder taro plant and the younger mankind were both born to

Wakea (Sky Father) and his daughter Ho'oku ka Iani. As the younger sibling, mankind honored and cared for its elder sibling. In return, the elder taro fed and nurtured its younger sibling. Taro is associated with this and other ancient myths and traditions connecting the plant to the concept of family itself. Even the Hawaiian language is influenced by these familial concepts. Taro reproduces via stems that sprout from the corm, the starchy, edible root growing underground. These stems are called *'oha*, the root word for *'ohana*, or family.

Honolulu's development and expansion and the Hawaiian society's transformed political and economic structure between the mid-nineteenth century and the early twentieth century drastically changed the Nu'uau Valley's landscape. By the mid-twentieth century, tracts of single-family houses replaced the lush *lo'i* and farmsteads, and reservoirs and underground pipes reconfigured the natural flow of the valley's streams. Since that time, the Nu'uau Valley's *'auwai* have suffered from neglect or destruction, due in large part to a lack of understanding about their historic significance.

The *'auwai* primarily existed to support taro cultivation. Taro can be cultivated by two very different methods. Upland, or dryland, taro is planted in non-flooded areas that are fed by rainfall. Lowland, or wetland, taro is grown in water-saturated fields. While wetland taro can be grown in marshy areas, along stream beds, and around springs, the preferred and more efficient cultivation method is in *lo'i* irrigated by *'auwai*. The *'auwai* construction and maintenance formed foundations around which an entire economy, class system, and culture functioned. E.S. Craighill Handy, an early-twentieth-century anthropologist, postulates that the *'auwai*, *lo'i*, and the taro plant's mythical and spiritual connections in Hawaiian society influenced individual and social activity within the *ahupua'a*. Taro cultivation affected many aspects of Hawaiian life: the labor required to build and maintain the *'auwai*; the shared water rights; and tributes to the *Mō'i* and to the chiefs (*Ali'i*).

In Hawaiian society prior to the *Mahele*, the *Mō'i* had the sole authority to order *'auwai* construction. Such an undertaking typically amounted to a public works project in which every capable hand in the community participated. The local supervisor of lands (*konohiki*) levied workers from the *'ili* through which the *'auwai* passed and oversaw the construction effort. The *konohiki* overseeing maintenance of the completed system became the water chief (*luna wai*). The farmers (*hoa'āina*), contributed labor to their respective *konohiki* based on the amount of water needed. Under the Hawaiian water rights system, a planter's construction labor contribution determined the amount of water allotted. Thus, water access for taro was not necessarily proportional to the acreage planted. The farmer of a large *lo'i* would earn a smaller share of water rights than a small *lo'i* if he contributed less labor.

*'Auwai* varied in size and structure depending on the number and size of *lo'i* they irrigated. In smaller *lo'i*, water could be directed from one terrace into the next below it. However, larger *lo'i* required individual *'auwai* capable of carrying more water. In more complex systems, these might be branches from another *'auwai*, often connected to the same source. Workers dug the ditches from the lower end upward to the water source, passing alongside *lo'i* or branching off into smaller, distinct *'auwai*. Openings in the embankments blocked by rocks or clods of earth allowed the *hoa'āina* to admit water into the terrace at designated times. Upon reaching the water source, work halted in preparation for a ritual celebration during which a modest dam (*mano*) was constructed.

In 1894, Emma Nakuina, an expert on Hawaiian water rights, described the *mano* consecration ceremony as one for rejoicing and feasting. The local priest of Lono (the god of agriculture, fertility, rainfall, and music) chose the appropriate day, and the *konohiki* supplied food for the workers. A hog and other food items were then baked in an underground oven (*imu*) near the *mano* site.

When everything was cooked and in readiness, the *kahuna* took the head of the hog, the fishes and the bowl of 'awa juice, and going to the place where the dam was to be built made an offering of these to the water *akua* or god...Everything edible at this feast of consecration had to be consumed either by the people or by their dogs. All the refuse was buried in the *imu*; the dam built in a few minutes, and the water turned into the new 'auwai, flowing directly over the now submerged *imu*.

In the *ahupua'a*, water rights were valued over land rights. In fact, Hawaiians equated access to water (*wai*) with wealth, property, or ownership (*waiwai*). The Hawaiian word for law, "*kanawai*," comes directly from water rights governance in the *ahupua'a*. Under this concept, the *luna wai* regulated 'auwai use. The *luna wai* established a schedule where by *hoa'aina* were allowed access at different times of the day or week. Failure by any farmer to maintain his portion of the 'auwai; to take water at the correct time; or to produce enough taro to pay his tribute resulted in a loss of his water rights. The responsibilities of the *luna wai* also included monitoring the *mano* at the source of the 'auwai. No more than half of the natural flow could be diverted, ensuring that the rights of those living and farming downstream were protected. This law was taken seriously: according to Nakuina, anyone caught tampering with or breaking the *mano* was subject to death and his or her body was used to block the offending break created.

Each *hoa'aina* constructed his own *lo'i* with help from family members or the community. The farmer first flooded the designated plot of land to soften the soil. After the soil was sufficiently loosened, workers lined up inside the plot and used an *o'o* (digging stick) to dig down to the subsoil. They then flung the loose soil around the perimeter to create embankments, firming them by pounding sugarcane leaves into the surface and layering them with coconut fronds, wet soil, and mulch. Farmers with *lo'i* located on steeper slopes often reinforced their plots with stone retaining walls. After constructing the embankments, the community or family members gathered for a day of treading. During this festive event, the *lo'i* were flooded with water, then men, women and children waded in and pounded down the mud by dancing, jumping, and stomping vigorously. Afterwards, participants enjoyed a celebratory feast. The following day, the *hoa'aina* planted taro in the firm mud of the *lo'i* and immersed the plants in water until harvesting.

After King Kamehameha I conquered the island of O'ahu and, in 1810, formally established the Kingdom of Hawai'i, he initiated a campaign to promote food production throughout the islands. Kamehameha's plan included cultivating his own land in Nu'uuanu Valley and constructing an extensive system of 'auwai in the valley. According to nineteenth-century historian, John Papa 'I'i, Kamehameha's farmhouses in Nu'uuanu "stood several hundred fathoms away from the right side of Nu'uuanu Street and Hanai a ka malama House [now the Queen Emma Summer Palace]. Perhaps this location was chosen to enable him to look both inland and seaward to his food patches." The king worked his own lands along with the commoners (*maka'ainana*), and as a result earned respect and admiration as a hard-working *Mō'i*.

The royal family continued to expand and improve upon the Nu'uuanu Valley's 'auwai in the valley after Kamehameha I's death in 1819. Nearly thirty years later, in 1850, Chief Kuho'oheihēpahu (Abner) Pākī constructed the last 'auwai in Nu'uuanu Valley. Judge Antonio Perry, in his 1912 history of Hawaiian water rights, explains that 700 men constructed the 'auwai in a mere three days. The completed Pākī 'Auwai, as it was named, extended from above Luakaha, near the upper end of Nu'uuanu Pali Drive, to below Wyllie Street near the O'ahu Cemetery. Joseph S. Emerson surveyed Nu'uuanu Valley in 1877. His detailed map of the Pākī 'Auwai, dated 1884, indicates that watercourse alone supported more than 100 *lo'i* at the time. Both private and government owners shared the 'auwai and adhered to a schedule carefully described by Emerson, even after the *Mahele* ended the land tenure system and resource sharing in the *ahupua'a*.

Late-nineteenth- and early-twentieth-century development in the valley led to a shift in land use resulting in a decline in taro production. As the island's population grew, so too did the housing density within Nu'uuanu Valley. Reservoirs built as early as the 1860s diverted water from the streams for use in Honolulu, forever changing the region's relationship to its water sources. By the mid-twentieth century, little agriculture remained in the valley. Instead the 'auwai traversed through or flowed under newly built suburban yards. Many 'auwai were destroyed or diverted underground, while others were neglected to the point of total deterioration, often because homeowners did not understand their purpose or significance. What remains is a disjointed system of ditches and underground drains. Today, evidence of fourteen original 'auwai, and numerous smaller branches, have been identified in connection with the Nu'uuanu, Pahoa, and Waoloni streams in the valley. Of those, eight still carry water or retain enough physical integrity to be rehabilitated. Recently, several preservation groups have focused attention on the condition of the 'auwai, increasing local awareness to their unique and significant history.

## Key Sources

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